

What is claimed is:

1. A laminate packaging flat cell, comprising:

a laminate film formed by combining polymer and metal with each other;

5 a power generating element formed of a plurality of electrode plates and separators, and hermetically sealed by the laminate film; and

an electrode terminal lead coupled to the electrode plate, wherein the power generating element is hermetically sealed by forming a thermally welded portion on an outer periphery of the laminate film, and

the electrode terminal lead protrudes from the thermally welded portion, and a through-hole is provided in a position thereof contacting the thermally welded portion.

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2. A laminate packaging flat cell according to claim 1,

wherein a plurality of the through-holes are provided in the electrode terminal lead from the power generating element side to an outside of the cell so as not to overlap with each other.

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3. A laminate packaging flat cell according to claim 1,

wherein a ratio of a cross-sectional area of the through-holes to a cross-sectional area of the electrode terminal lead ranges from 20 to 50%.

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4. A laminate packaging flat cell according to claim 1,  
wherein an adhesive layer is provided on at least one  
surface of the electrode terminal lead.
5. A laminate packaging flat cell according to claim 1,  
wherein an end of the laminate film joined to the electrode  
terminal lead is folded back toward an outside of the cell.
6. A battery module, comprising:  
at least two laminate packaging flat cells connected in  
series and/or in parallel,  
the laminate packaging flat cell comprising:  
a laminate film formed by combining polymer and  
metal with each other;  
a power generating element formed of a plurality  
of electrode plates and separators, and hermetically sealed  
by the laminate film; and  
an electrode terminal lead coupled to the electrode  
plate,  
wherein the power generating element is hermetically  
sealed by forming a thermally welded portion on an outer  
periphery of the laminate film, and  
the electrode terminal lead protrudes from the thermally  
welded portion, and a through-hole is provided in a position  
thereof contacting the thermally welded portion.

7. An assembled battery, comprising:

at least two battery modules connected in series and/or in parallel, the battery modules including a laminate packaging flat cell,

5 the laminate packaging flat cell comprising:

a laminate film formed by combining polymer and metal with each other;

a power generating element formed of a plurality of electrode plates and separators, and hermetically sealed  
10 by the laminate film; and

an electrode terminal lead coupled to the electrode plate,

wherein the power generating element is hermetically sealed by forming a thermally welded portion on an outer  
15 periphery of the laminate film, and

the electrode terminal lead protrudes from the thermally welded portion, and a through-hole is provided in a position thereof contacting the thermally welded portion.

20 8. A vehicle, comprising:

An assembled battery including at least two battery modules connected in series and/or in parallel, the battery modules having a laminate packaging flat cell,

the laminate packaging flat cell, comprising:

25 a laminate film formed by combining polymer and metal with each other;

a power generating element formed of a plurality of electrode plates and separators, and hermetically sealed by the laminate film; and

5        an electrode terminal lead coupled to the electrode plate,

wherein the power generating element is hermetically sealed by forming a thermally welded portion on an outer periphery of the laminate film, and

10        the electrode terminal lead protrudes from the thermally welded portion, and a through-hole is provided in a position thereof contacting the thermally welded portion.

9.        A method for manufacturing a laminate packaging flat cell, comprising:

15        preparing a laminate film formed by combining polymer and metal with each other; a power generating element formed of a plurality of electrode plates and separators, and hermetically sealed in the laminate film by forming a thermally welded portion on an outer periphery of the laminate film;  
20        and an electrode terminal lead coupled to the electrode plate, and having a through-hole provided in a contact portion with the thermally welded portion;

attaching an adhesive layer onto the contact portion of at least one surface of the electrode terminal lead; and

25        forming the thermally welded portion by thermally welding the laminate film while interposing the adhesive layer

therebetween, and hermetically sealing the power generating element.